Space Weather Forecast

Issued on Wednesday, 09 March 2022 at 12:32 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of G1 Minor Geomagnetic Storms. Chance of M-class flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity was Low over the period, with activity confined to isolated low Common-class flares. There are five sunspot regions on the visible disc. The one that is likely to be most complex is currently too close to the northeast limb for clear analysis. The largest region is in the southern hemisphere near centre disc, although it has faded slightly. A region in the southwest has some magnetic complexity and has grown over the last 24 hours. The remaining regions are small and weak.
There were no new Earth directed Coronal Mass Ejections (CMEs) seen in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was characteristic of a waning connection to a fast wind from a coronal hole. The solar wind speed started near 450 km/s, and decreased to around 400 km/s. The Interplanetary Magnetic Field was weak, while the north-south component varied weakly but was predominantly negative. The corresponding geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to be Low, with further isolated Common-class flares expected and a chance of Moderate-Class activity, mainly from the region close to the northeast limb.

Solar Wind / Geomagnetic Activity: There are two low confidence CMEs in the forecast, and latest modelling suggests they may start to merge and arrive very close together. It now appears most likely they will arrive during Day 2 (10 Mar), with the CMEs emitted on the 6th and 7th respectively.
Geomagnetic activity is expected to be initially Quiet to Unsettled (Kp 0-3). If we see the CME(s) then activity is likely to become Unsettled to Active (Kp 3-4) during Day 2, with a slight chance of G1/Minor Storm (Kp 5) intervals, with activity gradually declining through Days 3 and 4 (11-12 Mar). In the absence of CME effects, activity is expected to be mainly Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, however there is a very slight and increasing daily risk as the most significant regions rotate further west across the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	3	3	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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